Resonant Fields
the
Fundamental Mechanism of Physics, Made Easy to Understand

4th Edition
Ebook, 1st Chapter
Introduction

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Chapter

1

THE THEORY OF EVERYTHING: MADE SIMPLE

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1.1 Enigma Solved

At last! The enigma of the millennium has been solved! The two great facets of physics: Einstein's Relativity, (which describes very large things like gravity,) and Quantum Mechanics, (which examines very small things like atoms and subatomic particles) have finally been fused into a comprehensive, "Theory of Everything" that not only works well, but is intuitive and easy-to-understand! Just like Einstein wanted.

For over 70 years, theoretical scientists around the world have been wrestling with Einstein's Relativity (based on 'cause and effect,) and Heisenberg's Quantum Mechanics (based on the accumulation of random events,) in an effort to combine them into a comprehensive, intuitive, TOE (Theory of Everything.[1]) But until now, their efforts have failed, because deterministic cause-and-effect is fundamentally incompatible with randomness.

Heisenberg believed that detailed examination deep into the heart of the subquantum world was impossible. On-the-other-hand, Einstein died in 1955 trying to produce his intuitive, "unified field theory". However, he didn't succeed either. Yet he might have, if he had only lived just a little while longer.

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[1] In current mainstream physics, a Theory of Everything would unify all the fundamental interactions of nature into a single scientific model.

Six years after Einstein died, an exciting invention came to light—the continuous wave laser with its “light fantastic.” Even-at-that, this exciting invention kept the key to this universal mystery locked up inside itself for another 39 years. Finally, on December 19, 2000 the Resonant Field Theory was published.[2] Starting with that “light fantastic”, the enigma finally came unraveled, revealing Resonant Fields as the fundamental energy-field mechanism of physics, thereby completing Einstein’s life-long quest.

As Einstein found, everything in the universe is made of fields—oscillating, resonant systems of interacting energy fields. The only difference between one thing and another— one field system and another, is its sequence of light-speed energy flow. This includes all of the basic forces of nature, and every physical thing and process we study. The new theory of Resonant Fields has thus revealed the fundamental mechanism of physics, and the exciting, here-to-fore unknown operation of:

- quantum gravity and antigravity — movement, and acceleration,
- the mechanism behind Relativity,
- “action at a distance” and how gravity makes things fall,
- what makes things in orbit follow the shape of space-time,
- why light-speed is the universal speed limit,
- why the “laws of physics” appear to fail at singularity,
- how to explain duality, and correct quantum mechanics,
- and, what’s really in the middle of a Black Hole?

The Resonant Field Theory explains virtually everything we have observed… and yet it’s so simple that you will actually find the answers to these exciting mysteries in this very book!

1.2 A Brief Overview of Everything!

To date, many have faced the challenge and come away empty handed. However, others have at least defined the most important questions. Under the heading “**What is gravity?**” Famous scientist, educator, and writer Richard Feynman wrote: “What about the **machinery** of it? All we have done is to describe *how* the Earth moves around the Sun, but we have not said *what makes it go.* Newton made no hypothesis about this; he was satisfied to find *what* it did without getting into the machinery of it. *No one has since given any machinery*.

“It is characteristic of the physical laws that they have this abstract character. The law of conservation of energy is a theorem concerning quantities that have to be

[2] Out of print. But explained in this text.

calculated and added together, with no mention of the machinery, and likewise the great laws of mechanics are quantitative mathematical laws for which no machinery is available. Why can we use mathematics to describe nature without a mechanism behind it?" [3] (Italics mine.)

The new Resonant Field Theory answers these questions by correcting Quantum Mechanics to unveil that very **cause-and-effect mechanism** that Feynman envisioned. As a result, we actually do find out "*What makes it go*."

The new theory is logical, intuitive, and provides a more satisfying explanation than Supergravity, String Theory, any of the others, or all of them put together. It truly is a new, comprehensive, functional Theory of Everything, which shall be proven as we go along.

The key to unification was a major breakthrough, yet so simple. A **common basis of operation** needed to be found so that Quantum Mechanics and Relativity would become compatible. Thus, they would then fit together like pieces in a giant jigsaw puzzle, giving us a much bigger and clearer picture.

If we zero in on those most fundamental properties, we find that true randomness is incompatible with Relativity and the rest of science too, because they all depend on cause-and-effect. However, that very idea became quite unpopular with humans, which probably explains why the riddle hasn't been solved until now.

The fact is that $E=mc^2$ proved itself when they evaporated Hiroshima. So, the empirical evidence indicates that Einstein was correct. Therefore to complete his quest, The Resonant Field Theory provides a common foundation for all of physics by replacing "Uncertainty" with "Certainty"— and randomness with deterministic "Pseudorandomness."

The true "Laws of Physics" must provide satisfying, mathematically correct, explanations of the way things work and must not lead to "logical absurdities." The universe is not absurd! It doesn't operate in stupid ways. Thus, any operation that leads us to believe that the universe does bizarre things, (such as Heisenberg claimed,) or depends on magic to make it happen, (as his hypothesis implies) is inherently flawed. Our theories must explain what we actually observe. And they must work everywhere in the universe, under all circumstances— including the middle of Black Holes, as we shall see.

We will find that the Resonant Field Theory complies with all of the above requirements in a satisfying way by providing a common

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[3] Feynman 1, pages 7-9. See "References" at the end of the book.

foundation for all physics. Thus, Relativity (newly explained) and Quantum Mechanics (newly corrected) becomes automatically united.

1.3 Exposing Random Ideas

In the 1920s when Heisenberg came up with his random idea, there were very few tools capable of proving it one way or the other. However, there was at least one, electromagnetic radio waves. But scientists tended to leave radio to the amateurs, while they focused in on light as the darling curiosity of science. The problem is that natural light buries its operation in so much complexity, that every light source they had to experiment with appeared to be quite random. That is, it ***appeared*** to have random phase fluctuations. Consequently, it seemed logical to many that it must have some random component to it. But how?

Heisenberg, for personal reasons, had an insatiable desire to insert randomness into science. His problem was that Max Planck had shown that the amount of energy in each quantum was solidly fixed. Not only is it constant, but very precise, and that all energy exchanges take place in these precise quantum energy lumps, (having nothing random about them.) Planck had shown that the amount of energy in a single unit of electromagnetic energy is:

$E = nhv$
E = energy in joules
h = Planck's constant
v = frequency in cycles per second
n = an integer

Obviously, a sunbeam usually covers a much larger surface area than that of a single photon, as a result, sunlight is able to carry a very large amount of total energy. But, to understand light's very basic fundamentals, one must focus in on the very smallest common unit.

That smallest common unit is not the *quantum* or even the *photon* itself, because energy is 4-dimential, being measured over time and space. So we must look closer, at the very shortest and smallest possible resonant unit, a **single cycle**, a single wavelength, of that tiniest functioning electromagnetic field, the smallest and shortest possible pulse with the smallest possible volume and frontal area.

Now, frequency is measured in cycles per second. (The "second" being an arbitrary, man made,* unit of time.) So to find out how much natural energy there is in just one small unit, one cycle, we must divide the quantum energy by the number of cycles in a second.

$$E = nh\upsilon/\upsilon = nh$$

However, note that ***E*** is an energy figure, so the ***h*** in this instance is not exactly Planck's constant, but a tiny energy figure numerically equivalent to it. I call it a "***planck***".

Consequently, ***every wavelength,*** that is ***every cycle,*** of a minimum-energy photon, has exactly the same amount of energy— ***1h*** = one planck. Thus, it is fully quantized. No randomness there!

So, Heisenberg came up with the idea to combine this constant energy into a hypothetical particle. As a result, its arrival time would be much shorter than the period of oscillation. Thus, he could insert some randomness between their arrivals making all measurements perpetually "uncertain". An experiment in Chapter 12 will prove if it is true or not.

Thus, each possible arrival instant within each cycle was said to have only a "probability" of getting a particle, while the sum of these "probabilities" would average out to be the familiar sine wave function over that whole wavelength. Sounds reasonable, but what was wrong?

To begin with, there was no physical evidence on which to base his hypothesis, except the seemingly random phase shifts of natural light. After all, no cycle of any field system could oscillate or do anything else without energy. So the beginning of each cycle had to wait until his random-arriving particle got there. And if its arrival time were truly random, then the resulting phase would be random also. And that certainly appeared to be the case with light. But, if these phase shifts had another cause, then the effect would be to show that light is not truly random.

Next, with random arrival times, how would the photon maintain a constant wavelength or frequency? If the arrival times were truly random, then the entire time between particles would vary randomly. Consequently, not only the phase, but the wavelength as well would be perpetually unstable. Yet, no such natural fluctuation was observed. Red tended to stay red, blue— blue, and violet— violet.

What's more, any operational light would have to be generated by a regular process, not a random one as Heisenberg requires. Consequently, his theory could not apply to atoms or the rest of nature either.

Did he take these facts into consideration?

To him, all subwavelength measurements are random and thus, "uncertain" and valueless. This would form a barrier to measurement that could not be breached, because his "Uncertainty Principle" was supposed to be an inherent property of all nature. Thus, he called that full wavelength barrier, a "quantum limit."

The Eigenfunctions that detail the operation of things in resonance, and from which one can derive Planck's constant, require that all of the energy which is involved within each oscillation must be confined to the space-time of that one cycle under consideration. Its energy cannot slop from one cycle to the next. Otherwise there would be no "Planck's constant." Instead it would be "Planck's variable," and there would exist no quantum effect at all. Thus, a photon flying across millions of light-years of outer space would eventually loose its energy back into itself and disappear— making the night sky quite black.

Since Heisenberg's Uncertainty Principle is supposed to be fundamental to nature, it must appear in all electromagnetic waves, in deed, in all atoms, gravity, and everything else. However, such phase fluctuations would prevent the production of *any* consistent, coherent field system. **Thus, according to Heisenberg's hypothesis, lasers and even FM radio would be quite impossible!**

The detector in an FM radio also detects phase changes. If its phase really were random, every FM radio would emit a random hissing sound called "white noise," making its nice music quite unbearable. If this were the case, Armstrong could never have invented FM radio.

The coherent light from a laser also has a consistent phase over many many thousands of wavelengths, which would be quite impossible if the Uncertainty Principle were true. Consequently, in 1961, when the C.W. laser was invented, it should have been noticed that its operation was a direct violation of Heisenberg's Uncertainty Principle! **How Einstein would have been excited if he had only lived to see it.**

1.4 Heisenberg's Flaw

Did you notice the flaw in Heisenberg's logic, a direct misapplication of the definition of "random?" A twisting of its meaning in order to make it appear that he had uncovered something new. Thus, he claimed that a statistical analysis of the arrival times of his random particles would somehow produce the regular sine wave functions that we measure and observe.

Why is this wrong? Because of the very definition of "random:" "any number multiplied by or added to a truly random number always produces another random number." Consequently, when you do a real statistical analysis of truly random events, you always get a different answer— each time! It's the nature of true randomness.

What you NEVER get is consistency, reliability, or repeatability, let alone a regular, measurable, wave function— as with FM music.

However, there does exist a process that produces a consistent repeatable statistic, a reliable, deterministic wave function from real subwavelength activities— that process is: "***pseudorandom***."

To the untrained eye, pseudorandom things look very random. But their mathematics works quite differently. For example, a pseudorandom number generator is often used to produce sequential encryption codes because they are repeatable by the receiver, while appearing to be random to anyone who does not have the correct key.

However, pseudorandom numbers are quite deterministic, precise, and repeatable. Not random at all. That's why they work in encryption. But they can also be very complex so that they are difficult for humans to follow— to track or crack without the proper key.

Heisenberg provided no mechanism for converting his random world into the consistent, deterministic, reliable, repeatable world we observe. That is, he didn't prove his hypothesis, he just **said** it worked without providing any evidence.

What's more, he claimed bizarre subwavelength activities that we will examine in chapter 12 using some simple experiments. Such observable facts render his Uncertainty Principle moot!

Actually his hypothesis was very clever and looked plausible. Not only did scientists around the world believe it, but it caused them to focus their attention and research at or above the "the quantum limit" where it worked. The statistical analyses they produced brought about a certain improvement in accuracy that even impressed Einstein.

However, it also put a stop to those who would look below the quantum limit. Heisenberg even went so far as to claim that Deep Reality did not even exist. Thus, everything in the universe including atoms, electromagnetic energy, and everything else were, to him, merely accumulations of random— uncertain events.

1.5 The Certainty Principle

In order to correct Quantum Mechanics, and provide a new and solid foundation that will unite Relativity and Quantum Mechanics into a workable Theory of Everything, what's needed is, an entirely new understanding— the "**Certainty Principle**."

All interactions in the universe are between fields, because everything in the universe is made of energy fields. So, what is needed to make "Everything" consistent, reliable, repeatable and compatible with Relativity? Precision, cause-and-effect "Certainty!"— of course.

Without Certainty, even atoms won't work. Therefore, not randomness, but consistency, is the reason you always get water when you burn hydrogen. You never get something at random like chocolate piggies.

Atoms always get it right, and never forget how to do it.

Is this a description of anything truly random? Rather, isn't it really pseudorandom consistency, just like the foundation of Relativity?

Then, what about the "wave functions" generated using conventional Quantum Mechanics? Are they not actually produced right at or above that quantum limit making them quite deterministic and therefore quite valuable? Will they not provide important information about the energy flow patterns, (I call "Einstein Codes",) that actually determine how energy structures interact so precisely? As simple as it is, ***pseudorandomness*** provides Certainty, and the mathematical reliability needed to reveal the next step in advanced physics.

For example: How can we accomplish light-speed digital computing? Uncertainty would make them unreliable. But, if the universe really is deterministically pseudorandom rather than random, notice, how that changes the focus of the global computing industry. Now, with this new knowledge, you can engineer light-speed computers for the $500 billion per year industry.

Based on ***Certainty*** rather than Heisenberg's Uncertainty, ***photonic transistors*** have *already been tested in* San Diego switching in 1.2 femtoseconds[4] or more than 100,000 times faster than the best electronics.

"***Certainty"*** opens a large door to advance science. Think of all the research that will now be reinterpreted. Think of all the grants this should generate. Think of all the advancements and profits we can expect.

Now, your company or school can become number one in research, education and technology by implementing the **"*Certainty Principle***!"

Yes, we are about to embark on an exciting adventure, because Theoretical Physics has been made practical, profitable, easy-to-understand, and fun.

If Einstein had only lived to finish his work! I think he would be proud of this accomplishment.

Stay tuned, there's more excitement to come.

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[4] Nearly a millionth of a nanosecond!

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